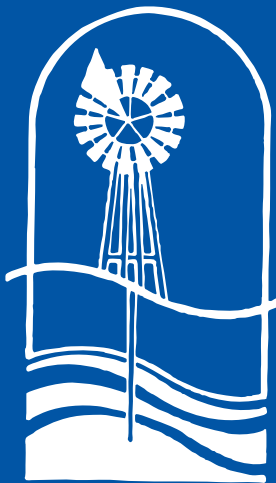




Livestock *A* Syst



Michigan
Groundwater
Stewardship
Program



MICHIGAN STATE
UNIVERSITY
EXTENSION



Livestock* A *Syst

Livestock Improvement Action Plan

Risk question	List high-risk practice(s) from Livestock* A *Syst and medium-risk practices that do not meet MAEAP requirements	Required for MAEAP verification	Alternative low-risk practice (include potential sources of technical and financial assistance)	Action plan	
				Planned completion date	Indicate date when completed
6.02	Example: Most roof water and upslope watershed drainage runs through livestock lot. No clean water system in place.	Yes	Divert clean roof runoff away from livestock lot. Repair barn gutters and downspouts, discharge roof water in vegetated area west of barn. Install curb/berm on east side of lot to divert runoff.	Sept. 2009	Completed (✓) Aug. 28, 2009

(continued on pages 29 and 30)

I understand that this livestock system assessment (Livestock* A *Syst) and corresponding Livestock System Improvement Action Plan were developed on the basis that I have disclosed, to the best of my knowledge, all information pertaining to my livestock operations.

Farm address: _____ Producer's signature _____

Street _____ Date _____

City _____ Livestock* A *Syst conducted by: _____

State _____ Zip _____ Name _____

Watershed name: _____ Title _____ Date _____

Progressive Approach for the MAEAP Livestock System

Introduction

The Michigan Agriculture Environmental Assurance Program (MAEAP) provides an excellent opportunity for Michigan farmers to manage their farms proactively and voluntarily to protect and enhance soil and water resources. For livestock producers, the ultimate accomplishment in MAEAP is Livestock System verification. Some producers may elect to pursue immediately the completion of a Comprehensive Nutrient Management Plan (CNMP) and MAEAP Livestock System verification. However, many producers find that smaller, progressive steps in environmental improvement are more economical and practical.

What is Livestock*A*Syst?

The MAEAP Livestock*A*Syst is designed to meet the needs of those producers who choose to use a risk management-based assessment to work their way to MAEAP verification via a progressive approach.

The Livestock*A*Syst is a series of risk questions and answers about livestock management practices reflecting components of a CNMP. Producers can work one-on-one with a non-regulatory MAEAP partner to identify potential environmental risks and to develop a confidential Livestock Improvement Action Plan to reduce those risks. The action plan is the producer's plan and can be completed at his/her own pace. There is no deadline. Producers determine how far and how fast to go.

Producers have several options for using Livestock*A*Syst:

1. Complete the risk questions to identify practices that present a high risk of contaminating water resources. At this point, producers may continue using Livestock*A*Syst to develop an implementation plan, or they may determine that they want to obtain the services of a certified CNMP provider to help them through the process of developing a plan to implement the desired changes.

2. Develop a Livestock Improvement Action Plan. Producers may choose to implement the action plan using their own resources, or they may choose to enter into an Environmental Quality Incentives Program (EQIP) contract to obtain cost-share assistance. The EQIP contract may include the development of a CNMP.
3. Complete implementation of the Livestock Improvement Action Plan prepares the producer to develop a CNMP, if that is his or her choice, and achieve MAEAP Livestock System verification. The owner of a MAEAP verified farm is eligible for a variety of incentives. The Livestock*A*Syst allows owners of small and medium-sized farms to enjoy the peace of mind of knowing that their practices are in conformance with the Right to Farm (RTF) Siting and Manure Generally Accepted Agricultural Management Practices (GAAMPs).
4. Farms that have been verified in the MAEAP Livestock System using a CNMP may complete the Livestock*A*Syst for reverification.

How does Livestock*A*Syst Work?

1. The environmental risk questions are grouped into seven sections. Producers select all relevant sections. Not all risk questions will apply to all livestock farms. Sections are:
 - Whole-farm Nutrient Balance
 - Farm Site Review
 - Manure Spreading Plan
 - Conservation Practices on Fields Used for Manure Application
 - Emergency Plan and Employee Training
 - Mortality Management and Veterinary Waste Disposal
 - Odor Management

Risk questions that address management practices that are regulated by state or federal law **indicate illegal practices with black bold print**. The numbered footnotes indicate what regulation(s) is(are) violated. (See Table 1, page 28.)

Risk questions that address management practices covered by the Michigan Right to Farm Act indicate the *risk level required for protection from nuisance lawsuits with blue bold italic print*.

Finally, a blue box indicates the management level(s) required for MAEAP verification.

MAEAP management requirements are aligned with state and federal regulations, the Michigan Right to Farm Act and environmentally based management practices that are supported by research. The records and/or plans that indicate the approved management practices have been implemented on the farm are listed in the column next to the risk question. This evidence will provide the basis for awarding environmental assurance through MAEAP.

2. Producers answer each risk question by selecting the statement that best describes conditions on their farm. The risk question answers indicate whether management practices have a low, medium or high risk of pollution. As noted above, some questions are coded to indicate conformance with a Right to Farm GAAMPs or violation of state law.
3. After completing each section, producers list the practices that present a high risk of contaminating water resources in the Livestock Improvement Action Plan. (The plan begins inside the front cover of the bulletin.) Medium risks are also included that do not meet MAEAP requirements.
4. In the Livestock Improvement Action Plan, producers list alternative practices, structures or equipment that they plan to use to help reduce risks, and sources of technical and financial assistance. A target date is included for accomplishing the changes as well as a target date for MAEAP verification.
5. Participation in an approved MAEAP Phase 1 educational session is also required for MAEAP verification.

After developing and implementing a plan to address the risks indicated by the Livestock*A*Syst, producers can contact the Michigan Department of Agriculture (MDA) to request a farm visit by calling 517-373-9797. An MDA inspector will schedule a visit at the producer's convenience.

Confidential Assistance

Participating farmers are offered confidential, one-on-one guidance through the risk assessment process. Confidential assistance is offered by members of MAEAP's nonregulatory partner organizations, including local conservation districts, Michigan State University Extension and the Michigan Milk Producers Association. Producers may indicate which organization they would prefer to work with or may contact the MAEAP office at 517-373-9797.

Assistance is available to help producers in a variety of ways, including:

- Guide producers through the Livestock*A*Syst assessment.
- Help producers understand MAEAP and other environmental expectations.
- Identify farm-specific areas of concern and opportunity related to environmental stewardship.
- Set farm-specific goals, timelines, and plans for improving and sustaining good environmental stewardship.
- Identify the appropriate resource persons to assist in the completion of specific steps toward environmental improvement.

No Obligation

Completing the Livestock*A*Syst does not obligate the farmer to specific changes. Farmers can progress as far as they feel comfortable or to meet individual farm goals. Note that some circumstances (e.g., CAFO designations, some EQIP requirements and Michigan Department of Environmental Quality [MDEQ] enforcement actions) require farms to implement a CNMP and/or other farm practice changes more quickly.

A Few Final Words

The key to Livestock*A*Syst is that once producers have identified environmental risks, they implement their plan to reduce the risk(s). Some of the stewardship practices that will reduce risks may cost very little and take very little time to implement.

Other practices may involve additional cost and may not be implemented for a few years. It is important, however, to have a plan to follow.

Producers who have developed a plan and implemented changes to address their risks are ready to consider MAEAP verification of their Livestock System.

Points of Reference

The Michigan Right to Farm Act, P.A. 93 of 1981, was enacted to provide farmers with protection from nuisance lawsuits. This state statute authorized the Michigan Commission of Agriculture to develop and adopt Generally Accepted Agricultural and Management Practices (GAAMPs) for farms and farm operations in Michigan. These voluntary practices are based on available technology and scientific research and promote sound environmental stewardship and help maintain a farmer's right to farm. The current Right to Farm GAAMPs are posted on the Michigan Department of Agriculture Web site: <http://www.michigan.gov/mda>.

P.A. 451 of 1994, Part 82 ensures the confidentiality of the producer information that farmers provide to the MDA for system verification. Any information connected with the development, implementation or verification of a conservation plan or conservation practice is confidential.

Tools in the Livestock*A*Syst Supplement:

Animal Waste Management (AWM). AWM is a planning/design tool for animal feeding operations that can be used to estimate the production of manure, bedding and process water, and determine the size of storage/treatment/facilities. The procedures and calculations used in AWM are based on the USDA-NRCS Agricultural Waste Management Field Handbook.

BODA recordkeeping forms. These forms provide the necessary documentation for both composting and burial of mortalities. These forms are found at www.maeap.org and in the Michigan State University Extension bulletin "Recordkeeping System for Crop Production," E-2342.

Manure Management: Getting Started. This nutrient balance worksheet is a tool to determine farm land base sustainability. Find at www.maeap.org.

Manure storage review sheets. This evaluation checklist assists in determining proper storage construction and notes if the structure can be verified. Find at www.maeap.org.

Odor management plan. This plan has been developed to address odors associated with livestock operations. Elements of an odor management plan can be found at www.maeap.org.

Proper Disposal of Dead Animal Carcasses Worksheet. This worksheet helps evaluate proper disposal of dead animal bodies and compliance with the Bodies of Dead Animals Act (BODA). Find at www.maeap.org.

Silage leachate management. This information provides tips for reducing silage leachate and associated risks. Find in the CNMP Guidance Document, question 7, at www.maeap.org.

Whole Farm Nutrient Balance

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
1.01) What portion of the animal feed is produced on your farm?		75 percent or more of the protein and phosphorus in the ration originates from on-farm sources.	Between 50 and 75 percent of the protein and phosphorus in the ration originate from on-farm sources.	Less than 50 percent of the protein and phosphorus in the ration originate from on-farm sources. This results in the buildup of soil phosphorus and other nutrients.	
1.02) Is there adequate land base for all nutrients produced on the farm?	Complete Manure Management: Getting Started (see Supplement) or use NRCS farm nutrient balance spreadsheet.	Yes, or manure is sold off site.	No, but fields test low in phosphorus and manure can be balanced on nitrogen.	No.	

Farm Site Review (for small and medium-sized livestock farms)

2.01) Does rain, snow or surface water come into contact with manure, compost, feed/silage, livestock lots or travel lanes, resulting in contaminated runoff?	Visual inspection of the farmstead. Visual inspection of flow patterns is most apparent during or shortly after a rainfall event and/or thaw.	If no, skip to relevant sections for the farm. Or, yes, but it is collected or treated.	Some areas are exposed to rain/snow or surface water.	Yes. Numerous areas are exposed to rain/snow or surface water, and water is not collected or treated.	
2.02) If surface drains are present around the farmstead, what is going to them and where do they end up?	Visual inspection of the farmstead. Visual inspection of flow patterns is most apparent during or shortly after a rainfall event and/or thaw.	Surface drains do not capture polluted runoff. Or, there are surface drains, but runoff is collected or treated.		Surface drains collect contaminated runoff and discharge to surface water or run to low areas and pond.⁴	
2.03) How far away is the well from the following areas: 1) Manure stacking areas? 2) Livestock lots?	Required for MAEAP Farmstead System verification.	Isolation distance is maximized to the extent possible but is not less than 75 feet for public wells and 50 feet for private wells.		Isolation distance is less than 75 feet for public wells and 50 feet for private wells.^{1, 3}	

A boxed risk level indicates the level required for environmental assurance verification (MAEAP verification).

Bold print indicates a violation of state or federal regulation. (See Table 1 on page 28.) **Blue print (bold italic)** indicates conformance with Right to Farm guidelines.

Farm Site Review (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
2.04) Do livestock watering systems have backflow prevention devices to protect the well from contamination?	Required for MAEAP Farmstead System verification.	All watering systems have backflow prevention built into the waterer or in the water lines to the waterers, or an air gap.		No backflow prevention for livestock watering systems.¹	
Milking center wastewater.					
3.01) How many gallons per cow per day are utilized in parlor cleanup?		Fewer than 10 gallons.	Between 10 to 20 gallons.	More than 20 gallons.	
3.02) How is plate cooler water handled?	Appropriate cooling water management demonstrated.	100 percent of plate cooler water is reused for livestock watering or other livestock-related use, or permitted for discharge.	Less than 10,000 gal/day are discharged onto ground surface. Discharged water does not intercept surface water.	More than 10,000 gal/day are discharged onto ground surface or intercept surface water without a permit.⁴	
3.03) What are your parlor cleanup practices?	Appropriate parlor cleanup practices demonstrated.	Initial pipeline rinse captured and added to manure. Waste milk never poured down drain. Manure and excess feed removed from parlor before wash-down.	Some milk poured down drain. Some manure and excess feed removed before wash-down.	All waste milk poured down drain. Manure and excess feed frequently washed down drain. Waste milk is discharged.⁴	
3.04) Is all wastewater collected and stored?	Appropriate wastewater management is demonstrated. No direct discharge.	Wastewater is stored, used or hauled daily.	Wastewater passes through a properly designed filtration system.	No. Wastewater is directly discharged to a lake, drainage ditch, stream or field.⁴	
3.05) Is rejected milk collected and stored?	Rejected milk is properly managed.	Yes, rejected milk is stored, hauled out or fed.		No, milk is discharged⁴ , put into septic system or put into treatment strip.	

A boxed risk level indicates the level required for environmental assurance verification (MAEAP verification).

Blue print (bold italic) indicates conformance with Right to Farm guidelines.

Farm Site Review (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
Milking system septic systems. If this method is not used, skip to the next section.					
3.06) Is all milkhous water treated by the septic system?	Collection and treatment of all wastewater are demonstrated.	Yes.		Some water is not treated or is discharged to tile, inlet or drainage ditch. ⁴	
3.07) Is the septic system designed to handle the volume of wastewater, solids and fats?	System operating effectively, without evidence of a discharge.	Yes.		No.	
3.08) Is the septic system periodically pumped?		Tank pumped more frequently than once a year.	Annual pumping.	Tank is pumped less frequently than once a year.	
Application of milking center wastewater to an infiltration system. If this method is not used, skip to the next section.					
3.09) Is storage used prior to treatment, such as a settling tank or detention basin?		Yes. Properly sized settling tank, detention basin or other pretreatment system is used.	Undersized settling tank, lagoon or other pretreatment system.	No pretreatment.	
3.10) Does the system handle the capacity of milking center wastewater generated?	Properly operating system confirmed by visual inspection of designed infiltration system.	Yes. Infiltration area effectively treats the quantity of wastewater generated. <i>Treatment area is managed to prevent pollution to waters of the state.</i>	Infiltration area shows minor erosion, wastewater ponding or burned vegetation.	No. Infiltration area has excessive erosion, wastewater ponding or burned vegetation.	
3.11) How is the infiltration system maintained?	Vegetation maintained and harvested. Records of maintenance kept.	<i>Vegetation maintained and harvested at least once per year.</i> Accumulated solids in settling basin removed as needed.		No maintenance, no settling basin.	

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Farm Site Review (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
Direct discharge to surface water or groundwater.					
3.12) Is milking center wastewater directly discharged to a lake, drainage ditch or stream?	No discharge present.	No. <i>Milk parlor and milking house wastewater is managed in a manner to prevent discharge into surface water.</i>		Yes. ⁴	
Manure storage. (Includes all storage systems used for manure, wastewater or runoff containment.)					
4.01) What is the storage capacity of manure systems?	Manure Application Risk Index (MARL) shows adequate acres for winter spreading. Records on manure production and storage capacity provided. MAEAP manure storage review sheets or NRCS animal waste management calculations are completed for storages to determine volume. (See Supplement.)	There is 6 months' or greater manure storage.	There is less than 6 months' storage; adequate land base is available for winter and summer applications.	There is minimal or no manure storage on site. Adequate land base is not available.	
Liquid manure storage systems.					
4.02) How far is the manure storage from any well?	Required for MAEAP Farmstead System verification.	For private wells: 150 feet or greater or with approved deviation. For public wells (dairy farms or farms with employees): at least 800 feet from the farm well. Or, approved isolation distance deviation for the well. Or, between 200 and 800 feet with approved storage and well and protective site features.		For private wells: less than 150 feet. ¹ For public wells (dairy farms or farms with employees): less than 800 feet from the farm well. ³	

A boxed risk level indicates the level required for environmental assurance verification (MAEAP verification).

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Farm Site Review (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
<p>4.03) What design standards were utilized for storage or treatment structures and facilities?</p>	<p>Appropriate manure storage design and installation demonstrated. Completed MAEAP manure storage review sheets or as-built engineering standards available. (See Supplement.)</p>	<p>Construction design for manure storage and treatment facilities meets specifications and guidelines found in MI NRCS-FOTG, Concrete Manure Storages Handbook (MWPS-36), Circular Concrete Manure Tanks pub. TR 9 (Midwest Plan Service, 1998).</p> <p>For steel: Manual of Steel Constr., Amer. Institute of Steel Construction. For concrete: Bldg. Code Req. for Reinforced Concrete, ACI 318, Amer. Concrete Institute. No evidence of overflow. For earthen storage, the permeability of the earthen liner is known.</p>	<p>Storage was designed and built by professionals, but the as-built design standards are unknown.</p>	<p>Storage was designed and built without engineering standards or is a natural depression area.⁴</p>	
<p>4.04) Are structures properly maintained?</p>	<p>MAEAP manure storage review sheets completed. (See Supplement.) Additional criteria may be required for CNMP development.</p>	<p>Structure is properly maintained and in good condition. No damage to the liner or breaches evident. No visible signs of issues with push-off ramps, load-out areas, pumps, piping, etc.</p>	<p>Structure appears to be in good condition.</p>	<p>Lining material integrity broken. Evidence of overflow. Coarse-textured soils, no clay liner. Evidence of extensive cracking, leaning, etc. Structure needs repair.</p>	
<p>4.05) Are areas adjacent to storage structures properly maintained?</p>	<p>MAEAP manure storage review sheets completed. (See Supplement.)</p>	<p>Banks are mowed and inspected regularly for potential problems. No brush, trees or animal burrows present.</p>	<p>Banks are not mowed regularly. Woody plant material present.</p>	<p>Lack of maintenance around storage site. Numerous areas in need of repair. Burrows present.</p>	

A boxed risk level indicates the level required for environmental assurance verification (MAEAP verification).

Blue print (bold italic) indicates conformance with Right to Farm guidelines.

Farm Site Review (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
4.06 Is clean water (i.e., roof and surface runoff) diverted away from the manure storage facility?	MAEAP manure storage review sheets completed. (See Supplement.)	Yes.	No, but storage is designed to accommodate the additional water while still maintaining the freeboard.	No. Potential exists for overflow of manure storage.	
4.07 How are freeboard maintained and overflow prevented in storage structures?	Appropriate manure storage management demonstrated. Safe freeboard level indicated on storage. Runoff is calculated.	Minimum freeboard is known and observed. All manure storage structures shall maintain a minimum freeboard of 12 inches (6 inches for fabricated structures) plus the additional storage volume necessary to contain the precipitation and runoff from a 25-year, 24-hour storm event. Freeboard markers are in place or available. No evidence that manure has been over the calculated safe freeboard level.	No evidence of manure overflowing storage. Safe freeboard level is known but not visibly marked. Freeboard not always maintained.	Evidence that manure overflowed the storage structure. Freeboard level is unknown and unmarked.	
4.08 Is human sewage added to the manure or wastewater?	Required for MAEAP Farmstead System verification.	No.		Yes. ^{4,10}	

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Blue print (bold italic) indicates conformance with Right to Farm guidelines.

Farm Site Review (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
Solid-bedded manure systems.					
5.01) How do you temporarily stack manure at the farmstead?	Appropriate temporary manure stacking demonstrated at the farmstead.	Manure is stacked in different locations where <i>runoff control protects neighboring land areas and prevents direct discharge to surface waters or groundwater.</i>	Manure is stacked in the same location every year. Evidence that manure-contaminated runoff flows to surface water or to adjacent property. ⁴		
5.02) Where do you temporarily stack manure at the farmstead?		Stacked on impermeable surface or fine-textured soil. Runoff does not reach surface water or pond in low areas.	Stacked on coarse-textured soil or earthen livestock yard receiving limited hoof traffic.		
5.03) How long is manure temporarily stacked at the farmstead?	Manure not stacked for more than 365 days.	Less than 90 days. Stacked in different locations each time.	More than 90 days but less than 365. Stacked in different locations each time.	At least 365 days, or more. Stacked in same location each time.	
5.04) How do you temporarily stack manure in relation to surface water?	Appropriate temporary manure storage demonstrated. Adequate isolation from surface water.	Manure stacked downslope from surface water or more than 300 feet upslope. All manure runoff collected and periodically land applied. Storage is watertight and meets or exceeds recommended capacity.	Stacked at least 50 feet away from surface water. Runoff water is diverted to vegetated filter strips or other means to prevent runoff into surface water.	Manure stacked within 50 feet of surface water. No means of runoff or leachate control. Slope is toward surface water.	
5.05) How are your solid manure storage structures designed and constructed?	Appropriate manure storage design and management for leachate/runoff control.	Constructed with a floor of impermeable material (concrete, asphalt) and with walls that prevent leachate from entering surrounding soils. Roof or cover prevents rainfall from entering storage.	Constructed with floor of fine- or medium-textured soils. Leachate will have direct contact with earthen floor or side walls. Leachate and rainfall/snowmelt runoff discharged into a designed system.	Earthen floor constructed with coarse-textured soils. Rainfall and leachate will have direct contact with the earthen floor or sidewalls. Runoff and leachate are uncontrolled. Structure floor is less than 2 feet above groundwater level.	

A boxed risk level indicates the level required for environmental assurance verification (MAEAP verification).

Blue print (bold italic) indicates conformance with Right to Farm guidelines.

Farm Site Review (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
5.06 How are your buildings with bedded manure packs designed and constructed?	Appropriate manure storage design and management for leachate/runoff control.	Constructed with a floor of impermeable material or fine-textured soil. Adequate bedding is provided to maintain solid nature of manure. No rainfall or runoff enters the manure area. No waterers in the building. Floor is more than 2 feet above groundwater level.	Medium- to fine-textured soils, limited bedding provided, some rainfall or runoff enters manure area. Waterers in the building. Floor is more than 2 feet above groundwater level.	Building has an earthen floor on coarse-textured soil and is subject to runoff from the roof or adjacent land areas.	
5.07 Is runoff from manure storage area(s) directly discharging to surface water or groundwater?	Appropriate runoff control from manure storage area(s).	Provisions made to control and/or treat runoff from stored manure. A designed and maintained vegetative infiltration area or runoff storage basin effectively handles storage runoff.	Inadequate runoff control. Signs of manure runoff past perimeter of vegetated area or exceeding storage basin capacity.	Manure storage runoff adversely affecting surface water and/or groundwater quality. ⁴	
Outside livestock lot management.					
6.01 How far is the livestock lot from surface water?	Appropriate livestock isolation distance from surface water.	More than 300 feet from surface water or engineered vegetative buffers are in place. And, runoff control protects neighboring land areas and prevents direct discharge to surface waters or groundwater.	75 to 300 feet from surface water, or vegetative buffers are in place. And, runoff control protects neighboring land areas and prevents direct discharge to surface waters or groundwater.	Evidence that manure-contaminated runoff flows from lot to surface water or to adjacent property. ⁴	
6.02 What efforts are made to divert roof water and upslope watershed drainage from becoming contaminated with manure?	Appropriate clean water management for livestock lot(s).	Provisions are made to collect, store, utilize and/or treat manure accumulations and contaminated runoff from outside open lots used for raising livestock. Clean runoff is diverted away from the livestock lot.	Most roof water and upslope watershed drainage is diverted around livestock lot. Water that contacts manure is treated or contained and applied to cropland.	No clean water system in place. Most roof water and upslope watershed drainage runs through lot.	

A boxed risk level indicates the level required for environmental assurance verification (MAEAP verification).

Blue print (bold italic) indicates conformance with Right to Farm guidelines.

Farm Site Review (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
6.03 How is live-stock lot runoff managed to protect surface water, ground-water and/or neighboring properties?	Appropriate site management for livestock lot(s). Producer records of manure scraping/ collection should be kept and evaluated to assess risk reduction.	<i>All lot runoff is directed to a properly designed and maintained runoff storage basin, or runoff is directed to a designed settling basin and vegetated infiltration area where vegetation is annually harvested. No evidence of runoff to surface water, groundwater and/or neighboring properties,</i> or ponding in low areas.	<i>No evidence of runoff flow to surface water or ponding in low areas. Dense vegetation or cropland that is annually harvested exists between lot and surface water.</i>	Evidence of runoff flow to surface water or intermittent waterway.⁴	
6.04 How often is manure scraped and removed from live-stock lots?	Appropriate manure management in livestock lot(s).	<i>Manure is scraped and removed periodically from livestock lot</i> or other heavy use areas.		Manure is seldom scraped and removed from lot and feeding and watering areas.	
6.05 What type of floor or base does the livestock lot have?	Appropriate floor or base in livestock lot(s).	Properly maintained concrete or compacted asphalt.	Continuous use, compacted dirt or compacted gravel. Minimal plant material growing.	Poorly compacted dirt or gravel layer as indicated by plant growth.	
Pasture management.					
7.01 Are there current soil tests on pastures?	Field names or map. Acres in the cropped portions of the field. Up-to-date soil test reports or schedule to bring all tests up-to-date. If pursuing a CNMP, soil samples should be taken every 3 years or more frequently.	All fields are sampled and tested on a regular basis, at least every 1 to 4 years, depending on crops being grown and the cropping system.	Most fields are sampled and tested every 1 to 4 years. Producer plans to bring all field soil tests up-to-date within the next 3 years.	Fields have not been tested within the past 4 years.	

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Farm Site Review (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
7.02) What is the condition of pasture vegetation?	No direct discharge from pasture(s).	Pasture is well-managed with all areas vegetated. Runoff from pasture feeding and watering areas travels through a vegetated filter area to protect surface water and groundwater. Or, no contaminated runoff is noted.	Pasture is well-managed and vegetated except in small feeding and watering areas, which are scraped. Runoff from pasture feeding and watering areas travels through a vegetated filter area to protect surface water and groundwater. Or, no contaminated runoff is noted.	Pasture is overgrazed with bare spots and weedy areas. Erosion may be present. Runoff from pastures is carrying sediment and nutrients to surface water⁴ or neighboring property.	
7.03) How is the pasture managed to protect surface water?	Pasture management to protect surface water from erosion and contamination demonstrated.	Livestock are excluded from actual contact with streams or watercourses except for controlled crossings and accesses. Or, pasture management measures are in place to protect neighboring land areas and prevent direct discharges to surface water or groundwater.		Runoff flow to surface water is evident. Livestock have free access to streams or watercourses, causing erosion.⁴	
7.04) What is being done to reduce manure concentration around watering tanks/feeders in pasture areas?	Proper manure management around water and feed demonstrated.	Water tank/feeding areas are rotated to different areas of pasture. Or, watering/feeding areas are permanent, but manure is removed frequently to prevent concentration of nutrients. Vegetation present is sufficient to slow movement of water, control soil erosion and utilize manure nutrients.	Watering/feeding areas are permanent, but manure is removed periodically to prevent concentration of nutrients. Runoff from pasture feeding and watering areas travels through a vegetated filter area to protect surface water and groundwater.	Watering/feeding areas are permanent with infrequent or no manure removal. There is evidence of runoff to surface water⁴ or ponding in low areas.	
7.05) How are animals handled in pastures or fields when ground is frozen or snow-covered?	MARI should be run on all fields used for winter pasturing of livestock.	Livestock are removed from fields or pastures during the winter months where runoff is a concern.	Livestock are grazed on fields or pastures for part of the winter months where runoff is a concern.	Livestock are present all winter on pastures or fields where runoff is a concern.	

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Farm Site Review (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
Silage storage.					
8.01) Does untreated silage leachate or polluted runoff run to a low area and pond?	Appropriate silage leachate management demonstrated. (See Supplement.)	No.		Yes.	
8.02) Is clean water (rain water, snow melt, etc.) diverted away from silage?		Clean water is diverted away from stored feed.	Clean water comes in contact with stored feed but is contained.	Clean water washes stored feed from storage area.	
8.03) Are silage leachate and polluted runoff collected and/or treated?	Appropriate silage leachate management demonstrated. (See Supplement.)	Provisions are made to control and/or treat leachate and surface water from a direct discharge. (Includes capturing of leachate from drains.) Designed system or management controls are in place.	Designed system is in place but not maintained.	No system is in place, or lack of appropriate management. Or, evidence of discharge to surface water or groundwater. ⁴	
8.04) At what moisture content is silage typically harvested and stored?	Lack of excessive silage leachate.	Generally below 67 percent.	Between 67 and 80 percent.	Over 80 percent.	
8.05) Does an emergency plan exist for times when leachate production exceeds current management controls?	An up-to-date emergency action plan.	An up-to-date written plan is available and understood by all farm employees.	Emergency action plan is incomplete or out-of-date.	No emergency action plan that covers excess leachate.	

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Farm Site Review (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
Bunker silos.					
8.06) What type of floor does the silage storage have?	A maintained impervious surface or fine-textured earthen floor.	Concrete, asphalt or lined surface. No cracks or cracks repaired.	Earthen floor with fine-textured soils.	Earthen floor has permeable soils. Concrete, asphalt or lined surface contains many cracks.	
8.07) Is silage covered?		Tight-fitting cover, no leaks.	Cover leaks.	No cover.	
8.08) Are the silage pad and surrounding area kept clean and free of loose silage?		Pad and surrounding area are kept clean.	Evidence of spilled or loose silage.	Pad is not kept clean.	
8.09) Is silage kept with a vertical face to reduce contact with clean water?		Yes.		No.	
Upright silos.					
8.10) If there is a floor drain, is leachate collected, treated and/or stored, and applied at agronomic rates?		Yes.		No.	
8.11) How often is silo inspected?		Twice a year.	Once a year.	Less than once a year.	
8.12) For sealed silo systems, is leachate evident around the outside of the silo?		No.	Yes. Leachate is treated or stored.	Yes. Leachate is not treated or stored.	

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Farm Site Review (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
Silage bag.					
8.13) Are holes repaired and the bag watertight?		Yes, holes are repaired and the bag is watertight.	Some holes are repaired.	Holes are not repaired, and moisture is entering the bag.	
8.14) Is plastic disposed of in a licensed landfill or recycled?		Yes.		No, plastic is burned on-site. ⁸	
8.15) Is there a mechanism for collecting or treating or utilizing accumulated leachate?	Effective leachate management demonstrated.	Yes.		No. Leachate runs from bags to surface water. ⁴	
Drinking water well condition.					
9.01) Is there an unused well located on the farmstead?	Required for MAEAP Farmstead System verification.	No unused well, or abandoned well properly sealed.		Unused, unsealed well at farmstead. ¹	
9.02) How often do you test your drinking water for nitrates and bacteria?	Required for MAEAP Farmstead System verification.	Tested yearly.	Tested within the past 3 years.	No water testing done, or more than 3 years since last test.	
9.03) What are the water test results?	Required for MAEAP Farmstead System verification.	No coliform bacteria or nitrate detected.	Water contamination detected. Public water well(s) test below health advisory limits.	Water contamination detected. Public water well(s) test above health advisory limits. ³	

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Manure Spreading Plan

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
10.01 How often are fields tested for nutrient levels?	Field names or map. Acres in the cropped portions of the field. Up-to-date soil test reports or schedule to bring all tests up-to-date. On farms pursuing a CNMP, soil samples should be taken every 3 years or more frequently.	All fields are sampled and tested on a regular basis , at least every 1 to 4 years, depending on crops being grown and the cropping system.	Most fields are sampled and tested every 1 to 4 years. Producer plans to bring all field soil tests up to date.	Fields have not been tested within the past 4 years.	
10.02 Do soil sampling procedures adequately represent field conditions?	Predominant soil types/soil maps. Cropping histories. Proper soil sampling procedure.	One composite sample is taken from uniform field areas of 15 to 20 acres or from uniform management areas using grid or zone sampling procedures.	One composite sample is taken from uniform field areas of 20 to 40 acres.	One composite sample is taken from areas of greater than 40 acres.	
10.03 How is the nutrient content of manure determined?	All manure analyses or book values on file.	Laboratory analysis for percent dry matter (solids), ammonium, and total N, P and K.	Book values or standard nutrient content values used.	Manure nutrient content is unknown.	
10.04 How are desired application rates achieved?	Rate of manure applied known for all spreaders. Records indicate date of calibration.	Manure analysis is known, and field application equipment is calibrated annually. Application rate is known.	Application rate is known.	Application rate is not known.	
10.05 How is the soil's ability to hold water and nutrients considered when calibrating for manure application?	No evidence of runoff or tile discharge. Tile lines monitored before and after manure application.	Rates are at or below a level at which manure would run off or escape via tile drains. Field and tile lines are inspected after application. An application that results in manure flow in a field tile is unacceptable.		Manure application rates may be above the soil's ability to hold the water and nutrients.	

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Manure Spreading Plan (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
<p>10.06 How are fertilizer application rates determined?</p>	<p>Applications consistent with MSU recommendations (MSU soil test printout or calculated MSU recommendations on field). When MSU recommendations are not available, other land-grant university recommendations developed for the region may be used.</p>	<p>Consistent with Michigan State University recommendations. And manure nutrients are credited.</p>	<p>Fertilizer rates are based on soil testing lab recommendations but not consistent with MSU recommendations.</p>	<p>Fertilizer use is not based on soil testing.</p>	
<p>10.07 What type of manure management records are maintained?</p>	<p>Additional nutrient management records that are needed if manure is used in the cropping system:</p> <ul style="list-style-type: none"> - Date(s) of manure incorporation. - Weather conditions during application of manure (e.g., sunny, 70 degrees F). - Field conditions during application of manure (wet, dry, frozen, etc.). - Manure/wastewater quantities produced and nutrient analysis results. - Records of rental or other agreements for application of manure/wastewater on land not owned by the producer. - Record of manure/wastewater sold or given away to other landowners. 	<p>Complete application records of manure analysis, soil test results and rates of manure application for individual fields are maintained.</p>	<p>Some manure application records are kept. Plan to maintain complete manure application records.</p>	<p>Minimal or no records maintained.</p>	

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Manure Spreading Plan (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
10.08 How are manure nitrogen application rates managed?	Manure rates do not exceed crop N needs, consistent with GAAMPs.	<i>Manure nitrogen rates do not exceed requirements of the crop</i> and are credited toward fertilizer needs. Pre-sidedress nitrate test (PSNT) may be part of the program.	Manure nitrogen credits are considered but not to their full extent.	Manure nitrogen credits are not taken into account.	
10.09 How are manure phosphorus application rates managed?	Manure rates do not exceed crop P needs. If developing a CNMP, refer to USDA-NRCS 590 Standard.	<i>High testing fields (>150 ppm Bray P1) do not receive manure, and fields between 75 and 150 ppm P receive no more than 4 years' crop P removal per year, if one year application is impractical.</i>	High testing fields (>150 ppm Bray P1) removed from spreading plan, but crop removal rates are not followed.	Manure application rates are not based on soil tests and/or crop removal rates.	
10.10 Are odor reduction practices utilized when manure is land applied?	Manure application records. Incorporation exceptions include: pastures or forage crops, or fields where crop residues are retained for erosion control.	<i>Yes, manure is generally injected or incorporated immediately (within 48 hours) when feasible.</i>	Manure is generally incorporated within 7 days or not at all on no-till or pasture/hay.	All manures are surface applied and may not be incorporated until field is covered or until spring tillage.	

Conservation Practices for Fields used for Manure Application

11.01 Are manure applications managed to avoid ponding, soil erosion and/or runoff?	No evidence of manure ponding, soil erosion and/or runoff.	<i>Liquid manure applications are being managed in a manner to optimize nutrient utilization and do not result in ponding, soil erosion losses, or manure runoff to adjacent property, drainage ditches or surface water.</i>	Some consideration is given to ponding, soil erosion and/or runoff.	Ponding, soil erosion and/or runoff are not considered.	
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Conservation Practices (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
<p>11.02 Have environmentally sensitive areas been identified (land near surface water, highly erodible land, soils with high leaching or runoff potentials, wells and surface inlets) that require additional management when applying nutrients (manure and fertilizers)?</p>	<p>Sensitive areas identified on field maps with appropriate management or setbacks:</p> <ul style="list-style-type: none"> - Areas next to surface water. - Fields with shallow groundwater. - Fields with water wells. - Areas near surface water inlets. - Fields with highly erodible soils. - Fields with highly leachable soils. - Fields with high runoff potential. <p>Training/communication plan to inform workers and contractors of appropriate management or setbacks is in place.</p>	<p>Environmentally sensitive areas are identified. Family members, employees and contractors are aware of and understand the management practices to protect these areas.</p>	<p>Some environmentally sensitive areas are identified.</p>	<p>Environmentally sensitive areas are not considered.</p>	
<p>11.03 How are fields selected for spreading on frozen and snow-covered ground?</p>	<p>MARI completed for each field receiving winter manure application, or spreading plan does not include winter spreading.</p>	<p>No winter applications.</p>	<p>Manure application risks index (MARI) is completed for each field receiving winter manure application. Or, <i>no liquid manure is applied on slopes greater than 3 percent, and no solid manure is applied to slopes over 6 percent.</i></p>	<p>Applications are made to fields where runoff to water resources may occur.</p>	

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Conservation Practices (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
11.04) Is soil erosion under control?	RUSLE2 and WEQ calculations completed and on file.	Soil erosion losses are within tolerances as documented by the revised universal soil loss equation (RUSLE2) and the wind erosion equation (WEQ). Minimal evidence of erosion and no evidence of concentrated water flows. Cover crop may be in place.	Erosion rates are unknown.	Excessive soil erosion is occurring on the farm.	
11.05) How is manure generally applied?	Manure application records.	Manure is incorporated within 48 hours or injected into the soil, and/or conservation practices (residue management, rough tillage, cover crops, etc.) are used to protect against runoff and erosion losses to surface waters.	Manure is generally surface applied, and conservation practices are employed to reduce the risk of runoff.	Manure is applied in a manner that results in ponding, soil erosion losses, or manure runoff to adjacent property, drainage ditches or surface water. ⁴	
11.06) How are streams, wetlands, farm ditches and other water bodies protected from manure runoff?	Field maps with setbacks and conservation practices identified. Records of manure incorporation.	Manure is injected or immediately incorporated. Or, surface applications are not done within 150 feet of surface water. Or, filter strips, riparian buffer strips, grassed waterways and other conservation practices are maintained between fields and surface waters on the farm and around surface water inlets.	Conservation practices are maintained on some fields.	Manure is applied within 150 feet of surface waters and not incorporated without conservation practices. And/or, manure occasionally reaches neighbor's property.	

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Conservation Practices (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
11.07 How are field tiles managed to prevent manure discharge?	Tiled fields identified on map. Record of tile flow before and after application (flow rate, color and odor).	Tile outlets are monitored, and there is no evidence of manure reaching surface water via tile. Surface inlets are buffered, manure is injected, and setbacks are observed to prevent surface flow to inlets.		Tile outlets are not monitored for manure discharge.	
Irrigation management on manured fields.					
11.08 If liquid manure is applied through an irrigation system, is care taken to assure that application rates do not exceed soil infiltration rates?	No field evidence of runoff. Irrigation records.	Yes. Application rates do not exceed soil infiltration rates. Irrigation scheduling is used.		Application rates exceed soil infiltration rates, and/or runoff occurs.	
11.09 Are appropriate backflow prevention devices in place and properly maintained when liquid manure is applied through irrigation?	Operational backflow devices field confirmed.	Backflow prevention safety devices are used and properly maintained when irrigating with liquid manure.	Backflow prevention devices are almost always used and/or properly maintained.	Backflow prevention devices are not used and/or properly maintained.	
11.10 Is care taken to assure that irrigated manure does not flow into subsurface drains?	No evidence of manure flow into surface drains.	Yes. Field conditions are monitored before, during and after irrigation, and appropriate measures are taken to avoid surface water and groundwater contamination.		No care is taken to monitor field conditions, tile drains, etc., when irrigating with liquid manure.	

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Conservation Practices (continued)

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
11.11) If there are instances when dilute wastewater (≤1 percent solids) is applied to fields testing over 150 ppm P soil test, can the farmer document appropriate conditions for application?	Appropriate dilute wastewater management demonstrated. The CNMP guidelines and NRCS Nutrient Management Practice standard (590) require the use of the Michigan Phosphorus Index (PI) when wastewater is applied to fields testing over 150 ppm P soil test. A PI of 17 or lower is needed.	<ul style="list-style-type: none"> - <i>Growing-plants in the application area.</i> - <i>Wastewater application rate supplies <75 percent of P crop removal.</i> - <i>Annual sampling of wastewater P content.</i> - <i>Soil P test levels decline over time.</i> - <i>No other P applied to field.</i> - <i>Tile-drained fields monitored for manure flow.</i> 	Appropriate conditions are partially met.	Appropriate conditions for dilute wastewater application are not present.	

Emergency Plan and Employee Training

12.01) Is an emergency plan in place in the event of a manure spill?	Up-to-date emergency farm plan.	Up-to-date written plan available and understood by all farm employees.	Incomplete or out-of-date action plan available.	No emergency action plan that deals with manure spills.	
12.02) What method of training is used to inform employees about the farm's emergency plan?		Employees are trained either by formal (class) or informal methods to respond properly to spills and discharges.	Training is sporadic or occasional.	No training is provided to employee responsible for manure handling.	

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Mortality Management and Veterinary Waste Disposal

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
13.01 How are animal mortalities handled?	Disposal of dead animal bodies is done according to the Bodies of Dead Animals Act (BODA), as amended in 2007. Up-to-date forms on file for verification. (See Supplement.)	Animals are buried, incinerated (requires permit), landfilled, placed in a compost pile or picked up by a rendering service within 24 hours of death or stored for a maximum of 7 days at 40 degrees F or a maximum of 30 days at 0 degrees F before proper disposal of the carcass.		Animals are not buried, incinerated, landfilled, placed in a compost pile or picked up by a rendering service within 24 hours of death. Or, bodies are stored for more than 7 days at 40 degrees F or more than 30 days at 0 degrees F before disposal. ⁵	
Dead animal composting.					
13.02 If dead animal composting is used, what are the isolation distances for the composting site?	Isolation distances meet BODA requirements. The BODA supplement, available at the MAEAP Web site, has been completed and reviewed.	Static pile site is located at least 200 feet from waters of the state, 200 feet from any well, 200 feet from nearest non-farm residence and 2 feet above seasonal high water table.		Site is located less than 200 feet from waters of the state, 200 feet from any well, 200 feet from nearest non-farm residence, and/or 2 feet above seasonal high water table. ⁵	
13.03 Does composting process follow standards identified in the Bodies of Dead Animals Act, as amended in 2007?	Composting records on file. The BODA supplement has been completed and reviewed.	Yes.		No. ⁵	
13.04 How are animal healthcare needles and syringes disposed of?	Presence of a sharps disposal container.	Sharps are put into a puncture-resistant container, labeled and taken to licensed landfill.		Disposal at landfill without protective containment, or disposed of on the farm. ²	
13.05 How are unwanted or unusable animal medications and healthcare products disposed of?		Taken to licensed landfill or veterinarian or distributor for disposal.		Flushed down the drain, dumped on the farm or dumped in the manure pit. ⁴	

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Odor Management

Risk question	Records or evidence for MAEAP verification	Low risk – 3 (recommended)	Medium risk – 2 (potential hazard)	High risk – 1 (significant hazard)	Your risk
14.01 Were the Michigan Right to Farm site selection and odor control guidelines used to site a new or expanding livestock production facility (after August 1, 2003)?	Conformance with the site selection and odor control GAAMPs.	Yes, with MDA verification. Yes, and MDA verification is not required. Or, not applicable.	Yes, followed siting GAAMP recommendations. Not verified by MDA.	No.	
14.02 Has there ever been an odor complaint from neighbors?		No.	Yes, but situation was mediated without third party involvement.	Yes. MDA was called in.	
14.03 Does the farm have an odor management plan?	A written odor management plan has been developed and reviewed. (See Supplement.)	An odor management plan, with all five modules, has been developed and implemented.	A partial odor management plan has been developed and implemented.	No odor management plan has been developed.	

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Table 1. Legal citations for environmental risks in Livestock*A*Syst

Footnote	Michigan Law	Description
1	Public Health Code, Public Act 368 of 1978, as amended	Part 127: Water Supply and Sewer Systems
2	Public Health Code, Public Act 368 of 1978, as amended	Part 138: Medical Waste Regulatory Act
3	Safe Drinking Water Act, Public Act 399 of 1976, as amended	
4	Natural Resources and Environmental Protection Act, Public Act 451 of 1994, as amended	Part 31: Water Resources Protection
5	Bodies of Dead Animals Act, Public Act 239 of 1982, as amended	
8	Natural Resources and Environmental Protection Act, Public Act 451 of 1994, as amended	Part 115: Solid Waste Management
9	Natural Resources and Environmental Protection Act, Public Act 451 of 1994, as amended	Part 55: Air Pollution Control
10	Grade A Milk Law, Public Act 266 of 2001, as amended	

Livestock*A*Syst

Livestock Improvement Action Plan (continued)

Risk question	List high-risk practice(s) from Livestock*A*Syst and medium-risk practices that do not meet MAEAP requirements	Required for MAEAP verification	Alternative low-risk practice (include potential sources of technical and financial assistance)	Action plan	
				Planned completion date	Indicate date when completed

MAEAP Verification Action Plan	Date
Target date for MAEAP verification of Cropping System	
Target date for MAEAP verification of Farmstead System	
Target date for MAEAP verification of Livestock System	

For MAEAP verification, contact MAEAP office at the Michigan Department of Agriculture: 517-373-9797.

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